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PATENT COOPERATION TREATY

PCT/EP2003/008517



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 40cdh/229100	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/008517	International filing date (day/month/year) 01 August 2003 (01.08.2003)	Priority date (day/month/year) 19 October 2002 (19.10.2002)
International Patent Classification (IPC) or national classification and IPC F15B 1/24		
Applicant HYDAC TECHNOLOGY GMBH		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.
☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 8 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 15 November 2003 (15.11.2003)	Date of completion of this report 01 March 2005 (01.03.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/008517

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 5-8, as originally filed
 pages _____, filed with the demand
 pages 1, 1a, 1b, 2-4, filed with the letter of 03 December 2004 (03.12.2004)
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-7, filed with the letter of 03 December 2004 (03.12.2004)
- ☒ the drawings:
 pages 1-2-2/2, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP 03/08517

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1 - 7	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1 - 7	NO
Industrial applicability (IA)	Claims	1 - 7	YES
	Claims		NO

2. Citations and explanations

This report makes reference to the following documents:

D5: DE 14 50 347 A (BAUMGARTEN HYDROTECH)

13 March 1969 (1969-03-13)

D6: DE 36 38 640 A (STROEMHOLMENS MEKANISKA VERKST)

19 June 1987 (1987-06-19)

D7: DE 36 19 457 A (BOLENZ & SCHAEFER MASCHF)

17 December 1987 (1987-12-17)

I INDEPENDENT CLAIM

1.1 The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claim 1 does not involve an inventive step within the meaning of PCT Article 33(3).

1.2 D5, which is considered to represent the prior art closest to the subject matter of claim 1, discloses (the references in parentheses are to this document):

Hydraulic accumulator with a piston (1, 2) in an

accumulator housing (9), said piston being displaceable in the axial direction thereof and separating a gas side (10) from a fluid side (16) of the accumulator housing (9). The periphery of said piston is provided with guide elements (5) which interact with the wall of the accumulator housing (9) (said elements are sealing elements that also function as guide elements). At least one sealing element (6) is provided which is offset in an axial direction with regard to the guide elements (5) and is arranged in the peripheral section of the piston (1, 2) located between said guide elements, wherein a pressure compensation channel (12) discharges at the periphery of the piston between the guide element (5) adjacent to the piston end abutting the fluid side (16) and the sealing element (6) immediately adjacent to said element in the axial direction and axially displaced towards the gas side, said channel forming a fluid path in the piston (1, 2) to the fluid side (16), and wherein a device (13) is provided in the pressure compensation channel (12) that reduces the usable cross section thereof.

- 1.3 The subject matter of the claim thus differs from the known device in that (i) the guide element adjacent to the fluid side of the piston is arranged such that it closely adjoins the fluid-side end of the piston and is formed by a guide strip having a dirt scraper lip that extends at least approximately to the end of the piston, that the guide strip has a rectangular ring seated in a ring groove of the piston periphery, said ring having a dirt scraper lip that extends the radially outwardly lying annular surface of the ring on one side in the axial

direction, said lip narrowing towards its terminal edge, and that the piston has a section with a reduced external diameter over which the dirt scraper lip extends in the peripheral area that extends from the fluid-side end to the ring groove.

- 1.4 The problem addressed by the present invention may therefore be considered that of better interconnecting the guide strip and a sealing lip.
- 1.5 The solution proposed in claim 1 of the present application does not involve an inventive step (PCT Article 33(3)). The reasons are:

D7 (the references in parentheses are to this document) discloses:

A hydraulic accumulator piston wherein the guide element (6, 8) adjacent to the fluid side (3) of the piston (2) is arranged such that it closely adjoins the fluid-side end (3) of the piston (2) and is formed by a guide strip (8) having a dirt scraper lip (5d) that extends at least approximately to the end of the piston (2), wherein the guide strip (8) has a rectangular ring (2b) seated in a ring groove (2b) of the piston periphery, said ring having a dirt scraper lip (5d) that extends the radially outwardly lying annular surface of the ring on one side in the axial direction, said lip narrowing towards its terminal edge (corner of 5d), and wherein the piston (2) has a section (11, 12) with a reduced external diameter over which the dirt scraper lip (5d) extends in the peripheral area that extends from the fluid-side end (3) to the ring groove (2b).

Consequently, D7 describes the same advantages as the present application with respect to feature (i). A person skilled in the art would therefore consider the inclusion of this feature in the device described in D5 to be a routine measure for solving the problem of interest. Moreover, the solution described in point 1.3 above is generally known to those skilled in the art from the prior art (see, for example, CH328184).

II DEPENDENT CLAIMS

2. Claim 2 does not meet the requirements of PCT Article 6 because the subject matter for which protection is sought is not clearly defined. The claim attempts to define the subject matter in terms of the result to be achieved, since neither the size of the device that reduces the usable cross section of the pressure compensation channel nor the size of the particles is specified, but in so doing merely states the problem to be solved without indicating the technical features required to achieve this result.

Further, this claim does not imply any limitation in the choice of the reduced usable cross section, since the size of the particles is entirely optional.

- 2.1 Dependent claims 3-7 do not appear to contain any additional features which, in combination with the features of any claim to which they refer back, meet the PCT Article 33(2) requirements for inventive step. The reasons are:

2.2 Re claims 3-5: the subject matter of claims 3-5 does not involve an inventive step (PCT Article 33(3)): see D5, in particular page 10, paragraph 2, and figure 1.

2.3 Re claim 6: see D6, in particular column 3, lines 27-38, and figures 1-4.

2.4 Re claim 7: see D7, in particular column 3, line 22 to column 4, line 2 and figures 1-2.

2.5 D6 and D7 describe the same advantages with respect to the features cited in points 2.2-2.4 above as does the present application. A person skilled in the art would therefore consider the inclusion of this feature in the device described in D5 to be a routine measure for solving the problem of interest.

III INDUSTRIAL APPLICABILITY

The subject matter of claims 1-7 may be made and used and is therefore industrially applicable.